CLAIMS

1. 1. A method for managing data volumes from a management terminal in a
2. distributed computer system having a host computer system with at least one
3. storage device connected to the computer system by driver software, the method
4. comprising:
5. (a) inserting an interface layer between the driver software and the storage
6. device, the interface layer exporting a platform dependent API and
7. controlling data passing between the driver software and the storage
8. device;
9. (b) running, in the host, management facade software that converts the
10. interface layer API to platform-independent method calls;
11. (c) running, in the host, a federated bean that discovers data volumes in the
12. storage device and generates method calls to the management facade to
13. control the interface layer; and
14. (d) controlling the federated bean to display and configure the data volumes.

2. The method of claim 1 wherein step (d) comprises controlling the federated bean
with a command line interface.

3. The method of claim 1 wherein step (d) comprises controlling the federated bean
2. with a graphical user interface.

1. 4. The method of claim 1 wherein step (a) comprises inserting a SCSI terminal
2. emulation interface layer between the driver software and the storage device,
3. which interface layer makes the storage device appear as a SCSI device.

1. 5. The method of claim 1 wherein step (a) comprises inserting a storage volume
2. interface layer between the driver software and the storage device, inserting an

3   additional data service interface layer between the storage volume interface layer

4   and the storage device and using the storage volume interface layer to divert

5   information passing between the driver software and the storage device to the

6   additional data service layer.

1   6.   The method of claim 1 wherein step (c) comprises:

2   (c1)   displaying all data volumes on the host with information regarding the data

3   volumes displayed in a uniform manner.

1   7.   The method of claim 6 wherein the data volumes on the host have various

2   volume types and step (c1) comprises displaying all data volumes of each

3   volume type together wherein information regarding each data volume type is

4   presented in a uniform manner.

8.   The method of claim 1 further comprising:

(e)   running a distributed management framework in the computer system, the

distributed management framework having a lookup service; and

(f)   using the lookup service to locate the federated bean.

9.   The method of claim 1 wherein the federated bean maintains a list of users for

each of the data volumes and the method further comprises:

3   (g)   registering each user of one of the data volumes with the federated bean

4   when the each user requests use of the one data volume; and

5   (h)   upon registration, entering the data volume user into a list maintained for

6   the one data volume.

1   10.   The method of claim 1 further comprising:

2   (i)   retrieving a list of users for a specific volume from the federated bean; and

3   (j)   contacting each user on the list to determine how the each user is using

4   the specific volume.

1   11.   The method of claim 10 wherein each user has a method describing how the

2   each user is using the specific volume and wherein step (j) comprises contacting

3   each user on the list and running the method in the each user.

1   12.   Apparatus for managing data volumes from a management terminal in a

2   distributed computer system having a host computer system with at least one

3   storage device connected to the computer system by driver software, the

4   apparatus comprising:

5   an interface layer that is inserted between the driver software and the

6   storage device, the interface layer exporting a platform dependent API and

7   controlling data passing between the driver software and the storage device;

8   management facade software in the host that converts the interface layer

9   API to platform-independent method calls;

10   a federated bean in the host that discovers data volumes in the storage

11   device and generates method calls to the management facade to control the

12   interface layer; and

13   a presentation program that controls the federated bean to display and

14   configure the data volumes.

1   13.   The apparatus of claim 12 wherein the presentation program comprises a

2   command line interface.

1   14.   The apparatus of claim 12 wherein the presentation program comprises a

2   graphical user interface.

1 15. The apparatus of claim 12 wherein the interface layer comprises a SCSI terminal
2   emulation interface layer that makes the storage device appear as a SCSI
3   device.

1 16. The apparatus of claim 12 wherein the interface layer comprises:
2   a storage volume interface layer located between the driver software and
3   the storage device; and
4   an additional data service interface layer located between the storage
5   volume interface layer and the storage device and wherein the storage volume
6   interface layer is used to divert information passing between the driver software
7   and the storage device to the additional data service layer.

17. The apparatus of claim 12 wherein the federated bean comprises a logical disk
    aggregator that retrieves information from all data volumes on the host.

18. The apparatus of claim 17 wherein the data volumes on the host have various
    volume types and the logical disk aggregator comprises mechanisms that
    retrieve information from each volume type.

19. The apparatus of claim 12 wherein the computer system has a distributed
    management framework with a lookup service running therein; and the apparatus
3   further comprises a mechanism in the lookup service that locates the federated
4   bean.

1 20. The apparatus of claim 12 wherein the federated bean comprises a list of users
2   for each of the data volumes and a mechanism for registering each user of one
3   of the data volumes with the federated bean when the each user requests use of
4   the one data volume by entering the data volume user into a list maintained for
5   the one data volume.

1   21.   The apparatus of claim 12 wherein the federated bean further comprises a
2   mechanism that retrieves a list of users for a specific volume from the federated
3   bean and a mechanism that contacts each user on the list to determine how the
4   each user is using the specific volume.

1   22.   The apparatus of claim 21 wherein each user has a method describing how the
2   each user is using the specific volume and wherein the mechanism that contacts
3   each user comprises a mechanism for calling the method in the each user.

1   23.   A computer program product for managing data volumes from a management
2   terminal in a distributed computer system having a host computer system with at
3   least one storage device connected to the computer system by driver software,
4   the computer program product comprising a computer usable medium having
5   computer readable program code thereon, including:
6   interface layer program code for insertion between the driver software and
7   the storage device, the interface layer program code exporting a platform
8   dependent API and controlling data passing between the driver software and the
9   storage device;
10   management facade software that converts the interface layer API to
11   platform-independent method calls;
12   federated bean program code that discovers data volumes in the storage
13   device and generates method calls to the management facade to control the
14   interface layer; and
15   a presentation program that controls the federated bean to display and
16   configure the data volumes.

1   24.   The computer program product of claim 23 wherein the presentation program
2   comprises a command line interface.

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1   25.   The computer program product of claim 23 wherein the presentation program

2   comprises a graphical user interface.

1   26.   A computer data signal embodied in a carrier wave for managing data volumes

2   from a management terminal in a distributed computer system having a host

3   computer system with at least one storage device connected to the computer

4   system by driver software, the computer data signal comprising:

5   interface layer program code for insertion between the driver software and

6   the storage device, the interface layer program code exporting a platform

7   dependent API and controlling data passing between the driver software and the

8   storage device;

9   management facade software that converts the interface layer API to

10   platform-independent method calls;

11   federated bean program code that discovers data volumes in the storage

12   device and generates method calls to the management facade to control the

13   interface layer; and

14   a presentation program that controls the federated bean to display and

15   configure the data volumes.